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DETAILS ON NEW NETHERLANDS-BUILT  
YUGOSLAV MOTOR SHIP

S. Loncaric

In the first quarter 1951 the last of a series of seven ships, completed or newly built in the Netherlands in accordance with trade agreements between the Netherlands and Yugoslavia, will be delivered.

On 27 January 1951, the Yugoslav Navigation Line received its newest passenger and cargo motor ship, the Slovenija, from the Nederlandsche Dock en Scheepsbouw Maatschappij Shipyard in Amsterdam. The same shipyard is now completing the motor ship Crna Gora of the same type and size as the Slovenija. The keel of the Slovenija was laid on 19 March 1950, and the ship was launched on 21 October 1950. The keel of the Crna Gora was laid on 16 June 1950, and the ship was launched on 21 January 1951. It will probably be delivered in March 1951.

The Slovenija is open shelter-deck type, with a bevel-shaped prow, and cruiser-type stern. The ship is built of Siemens-Martin steel in compliance with specifications of Lloyd's Register, regulations on sanitary and safety measures for ocean-going ships, the Convention on the Protection of Human Beings Aboard Ship, and rat prevention regulations. The Slovenija belongs to the 100 A-1 category as classified by Lloyd's.

Specifications of the ship are as follows:

Deadweight tonnage	9,140 tons
Gross registered tonnage	5,300 "
Net registered tonnage	3,400 "
Over-all length	140.21 meters
Length between perpendiculars	131.50 "
Beam	17.04 "
Height to shelter deck	12.03 "

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Height to main deck  
Maximum draught  
Promenade deck

11. meters  
7. meters  
901 millimeters

Almost all joints are welded. Rivets are used only to join the lining of the ship's bottom with the framework, and the sides with the open shelter deck. The over-all weight of the ship was reduced 10 percent through welding.

The ship has an even keel securely joined to the bow and stern frames. The bow frame is made of steel plates, and the stern frame of cast steel. The rib span is 635 millimeters fore and aft, and 711 millimeters amidships.

The Slovenija has two full-length decks, and a third from the bow to the forward bulkhead of the engine room. There are mast housings on the shelter deck, and superstructures at the stern and ships.

The ship has four large holds, each with a hatch 9.25 to 10.67 meters long and 6.10 meters wide. It has a fifth hatch between the two central housings which serves hold No 2 and the forward vertical tank. There is a small hold with a 4.10 x 6.10 meter hatch at the stern. The lower holds and bilges are provided with longitudinal bulkheads and natural and forced ventilation.

There is one vertical tank fore and aft of the engine room. The lateral tanks of the passageway are in hold No 4.

The total storage area for grain is 572,30 cubic feet, which is equivalent to 514,230 cubic feet of baled goods. In addition, there are 15,520 cubic feet for the ship's equipment.

The vertical tanks are designed to hold fuel, vegetable oil, or ballast water. Their capacity is 1,700 tons (cubic meters). They may also be used for storing dry goods. The lateral tanks may be used for oil or ballast water. A pumping system connects the lateral tanks with the vertical tanks. The bottom tanks may be used for ballast water or fuel; their capacity is about 1,700 cubic meters.

The bow ballast tank is filled and emptied from the engine room. The stern tank is designed for drinking water; it is filled from the deck and emptied from the engine room. The bottom tanks in the engine room are designed for fuel oil and lubricants; they are supplied by bulkheads. An impenetrable bulkhead extends the length of the ship except for hold No 1. The bilge is 100 centimeters high; the ship's drainage system is complete and efficient.

Ballast and vertical tanks have baffle frames. The lateral and vertical tanks have heating coils.

There is an emergency exit from the passageway to the deck.

The Slovenija has 16 booms of the steel type with steel extensions and yardarms; each mast has two booms. In addition, there are eight Jamson columns with one boom each. Twelve booms each have a capacity of 5 tons, four of 10 tons, and one of 20 tons. The booms behind the No 4 hold are able to service the small stern hold as well. The booms are 15 to 16 meters long, with an outreach range of 2 to 11 meters. They are equipped with automatic Laveridge lubrication rings.

The ship has 16 horizontal electrically operated hoists; each hoist has a control device, electric motor, rheostat, boom, traction head, and operator's chair. Eight hoists have a lifting capacity of 5 tons each; the other eight have 3-ton capacities. The 5-ton hoists at the stern may also be used as traction hoists. In case a higher operating speed is desired, the 5- and 3-ton hoists

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may operate at reduced capacities of 2 and 1 tons, respectively. The control device and operator's chair are not attached directly to the hoist, thus enabling the operator to observe work done in the holds.

The lifting and lowering speeds of hoists (in meters per minute) are:

	<u>Lifting Speed</u>		<u>Lowering Speed</u>	
	<u>5-Ton</u>	<u>2-Ton</u>	<u>5-Ton</u>	<u>3-Ton</u>
Full load, second gear	15	35	30	35
Full load, normal gear	10	50	70	65
No load, second gear	60	70	60	30
No load, normal gear	150	125	150	160

The electric anchor hoist with high-speed traction drums has slide valves behind the side chain tubes and control devices below the trench. The motor is powerful enough to lift the anchor at the rate of two chain lengths in 6 minutes.

Sixteen cleats, 30 to 35 centimeters in diameter, are welded to the deck. There are two triple-drum winches at the stern and two at the bow. There are "Panama eyes" in the middle of the stern.

The electrohydraulic steering mechanism is powerful enough to shift the rudder from 38 degrees port to 38 degrees starboard in 30 seconds. All rudder parts are welded. The rudder's surface is 1.4 percent of the entire ship's lateral surface. There are steering control lights on the bridge and in the engine room, and pilot's wheels on the bridge and stern.

All four lifeboats are collapsible. Their frames are hardwood and the benches and other parts are metal. Each boat can hold 25 persons. One boat is equipped with a 10-horsepower gasoline engine. All boats have portable radio receiving and transmitting sets. Lifeboat davits are the Welin type. Equipment is also available to lift the boats by hoists.

There is a triple davit on each side for hoisting and lowering the gangway. Equipment for lifting machine parts is on the shelter deck along the engine room skylight. A sufficient number of canvas awnings are available as protection against the sun.

The central fire-fighting equipment with 63 cylinders of carbon dioxide is in the bow mast housing. The fire detector is in the steering compartment. Fire detection and extinguisher pipes lead to all holds, rooms, vertical tanks, and the engine room.

In addition to standard nautical instruments, such as three magnetic compasses, chronometer, and sextant, the ship is equipped with a Lodestone make of radiocompass, a Hughes magnetic-strictional (superconic) sounding device, and a Sallog speed indicator. The ship has space for, and is wired for, a gyrocompass, radar equipment, and automatic steering gear mechanism which will be installed at the proper time. Wireless telegraphs (transmitting facilities) are located on each side of the bridge and a third is on its roof.

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The radio station has a 200-watt medium-wave transmitter, a combination medium- and short-wave receiver, a 200-watt short-wave transmitter, a short-wave receiver, and an emergency receiver. The ship has two automatic alarms, one of which operates through the ship's radio transmitter in case of emergency.

Decks around all cabins are floored with Siarose gum.

The deck water pipe, which has ten valves, extends the length of the ship. Valves are placed so that any point on the deck can be covered by at least two hoses, which can be connected to each valve. The hot water pipe extends all the way to the anchor chain openings.

The navigation and radio-telegraph sections are on the upper bridge; the captain's, deck officers', and passengers' quarters are on the lower bridge; the hospital is above the engine room; the deck chief, petty officer's and carpenter's quarters and the crew sleeping room are in the stern housing; the passengers', administrative officers', chief engineer's, other engineering officers', and auxiliary crew members' quarters, smoking rooms, and mess and galley are in the two central housings on the shelter deck; and crew quarters are at the stern. On the main deck in the central part of the ship are food and water supply rooms, cellar, cold-storage room, etc. There are steam-heated radiators in all living quarters, dining rooms, smoking rooms, bathrooms, toilets, etc. There is a built-in steam stove in the ship's drawing room. The steam pipe to quarters at the stern goes through the passageway. At all places where steam pipes touch wooden wall panels, the steam pipes discharge exhaust steam into a special hot air well in the engine room.

There are electric heating facilities in the captain's quarters, passengers' cabins, and smoking rooms.

The galley has an electric range and electric inventory oven.

A 1,000-cubic-foot General Motors refrigerator is located in the middle part of the main deck.

A 250-liter hydrosphere tank, automatically refilled by an electric pump operating from a 32-ton tank on the main deck, supplies drinking water to the galley, drawing room, pantry, and two ice-water tanks in the cold-storage room.

Fresh water for washing and laundry is pumped electrically from a 32-ton tank and from the stern water tank to a special 1,500-liter tank in the engine room. This tank is connected with the hydrosphere tank and under its pressure supplies water to the galley, pantries, showers, baths, washrooms, electrically heated 200-liter tank, and the crew quarters. Hot water for washing is obtained from a 400-liter boiler in the engine room and another 500-liter tank in the pantry which adjoins the drawing room. A 3-ton cylindrical tank in the engine room, which is electrically operated, supplies water to all bathrooms, toilets, washrooms, galley, and pantries.

The electric lighting is first class. The lighting is grouped so that there are never more than ten lamps to a group. Navigation signal lights are electric, but there are also oil signal lights for emergency use. The switchboard for electric navigation lights is in the steering cabin. The ship has ten lamps for night loading and unloading. There is one outlet for a Suez searchlight on the bow, and four more outlets for Suez lights amidships.

The captain's office, smoking room, drawing room, pantry, dining room, radio room, navigation bridge, and chief engineer's and first officer's cabins have telephones.

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Speaking tubes connect the captain's bridge with the stern and the engine room, which has a special booth for this purpose. One speaking tube connects the captain's bridge, captain's bedroom, and engine room, and the other connects the chief engineer's cabin with the engine room.

The main engine is a standard two-cycle, two-contact (Tumble ignition?) six-cylinder, 6,500-horsepower, 116-revolutions-per-minute Stork diesel. The cylinder bore is 720 millimeters and the stroke 1,000 millimeters. The cylinder jackets of the main and auxiliary engines are chlorided by the Van der Hart method, thus increasing their hardness.

A two-cylinder gas pump for flushing the engine is attached to the front part of the crankshaft.

The instrument panel is left-center of the engine.

The engine's electrical equipment is supplied with current from three 160-kilowatt, 220-volt, 375-revolutions-per-minute dynamos. Each dynamo is driven by a four-cycle Stork 240-horsepower diesel engine. The engines on the right side have a 240-cubic-meter air-compressor capacity per hour, with an outlet pressure of 20 atmospheres.

The main engine pistons are oil-cooled, the jackets and heads water-cooled. Two oil-cooled Heintzsch electric pumps are in the left part of the engine room. Two coolant pumps, one for sea water and the other for fresh water, are driven by an electric motor located between the pumps. One oil pump and one water coolant pump are kept in reserve.

The auxiliary engines also operate a graduated lubricating pump which has an oil cooler and filter. In addition, there are two auxiliary pumps for the ice-water system; one is on the left side and the other on the right side of the engine room. These pumps, as well as ballast, bilge, and other small water pumps are all centrifugal Stork type.

The fuel-oil valves of the main engine and auxiliary engine nozzles are oil-cooled. For the main engine fuel-oil valves there are two small electrically operated cooling pumps; each of the auxiliary engines operates its own cooling pump.

There is an oil-heated cooling water pump located at the front of the engine room. A 5-ton electric derrick is installed above the main engine. Separate derricks for main and auxiliary engines are in the workshop. The ship has three electric centrifugal separators, one for sea oil, one for lubricants, and one for emergency use.

The master switchboard panel is on the left side of the engine room. The machinery for the refrigeration is on A deck, left of the engine room. The ship's workshop is also on A deck; the ship has a lunch bath, a drill, and a planer, all using the same belt drive and an independent operated twin grinder.

On the right side of A deck are two 11-cubic-meter-capacity cylinders containing compressed air for the main engine. Nearby is the lubricant and cylinder oil storeroom.

For emergency use the cold storage room has an 18-horsepower Mister installation with a 10-kilowatt, 220-volt dynamo and an emergency compressor with capacity of 15 cubic meters of air an hour under 20 atmospheres of pressure.

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Two utility fuel-oil tanks with a capacity of 15 cubic meters each, and a gravity tank for the fresh water supply are in the engine room hatch on C deck. Spare pistons for the main engine are also stored here. Machine equipment rooms are between the workshop and the cold-storage room.

There are two lubricating-oil cooling installations left of the engine room below A deck and parallel to it. Nearby is a fresh water cooler.

Mitchell thrust bearings are self-lubricating. The shaft bearings in the passageway are also a standard self-lubricating type.

The diameter of the propeller shaft bearings is 5 percent greater than usual because of the ice coefficient given to this ship.

The stern pipe has a brass covering and is encased in a shell. The propeller shaft has a brass jacket.

The ship's propeller is brass, has four blades, and weighs 8 tons. The spare propeller is cast iron and set up on the deck. The main and auxiliary engines are mounted on solid bases. They are properly arranged, well balanced, and very convenient. The auxiliary engines are easily accessible from all sides. Measures have been taken against excessive vibration and noise. The compressed-air cylinders are located where they can be taken down and inspected easily.

The engine room floor is made of sectional iron plate which can be disassembled for cleaning.

The ship's drainage system is excellent, convenient, and easily accessible.

The disposition of fuel and lubricant reserves is good and safe. The tanks are conveniently located and well balanced. Fuel tanks are loaded through a pipe on the side of the ship. Heating and purification of fuel oil and lubricants is excellent, and the separators and filters are of the best construction available. Measures have been taken for personnel safety in the engine room. Fire security measures have been taken. Engine room premises are painted with fire-resistant paint. Fire extinguishers and manually operated carbon dioxide cylinders are within easy reach.

The engine room has natural and forced ventilation and is well lighted. In general, the material used in the ship's construction is of the best quality; and, where necessary, it is built to resist high temperatures.

On 19 January, during a test run on calm waters in the North Sea off the Netherlands, the Slovenik unloaded and with a clean bottom attained a speed of 17.35 knots at 116 revolutions per minute.

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